

**Quality Improvement Organizations**  
Sharing Knowledge. Improving Health Care.  
CENTERS FOR MEDICARE & MEDICAID SERVICES

**Great Plains**  
Quality Innovation Network

**Better Together**

**Connecting the Dots**  
**Antibiotics, Immunizations, and Sepsis**

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March 15, 2022  
3:00 – 4:00 pm CT  
Tammy Wagner, RN, LSSGB, CADDCT, CDP  
Krystal Hays, DNP, RN, CADDCT, CDP, RAC-CT

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**Polling Question #1**

- The description that best fits my organization:
  - Nursing Home
  - Hospital
  - Home Health/Hospice
  - Clinic
  - Other

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**Objectives**

- Understand the connection between sepsis, immunizations and antibiotics
- Review data related to sepsis in the Dakotas
- Recognize the role immunizations play in avoiding unnecessary antibiotics
- Review resources to support antibiotic stewardship, sepsis recognition and immunization

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### Polling Question #2

- My organization has worked on sepsis outreach and awareness:
  - Yes
  - No
  - Not sure

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### Video The Faces of Sepsis

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### What is Sepsis?

- Sepsis is the body's extreme response to an infection. It happens when an infection your patient already has— like in their skin, lungs or urinary tract—triggers a chain reaction throughout their body
- Sepsis rapidly leads to tissue damage, organ failure and death
- Sepsis is life-threatening and requires prompt treatment. Early recognition and treatment of sepsis saves lives

<https://www.cdc.gov/sepsis/what-is-sepsis.html>

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## Sepsis: The Impact

- 270,000 Americans die each year from sepsis
- 87% of sepsis cases start in the community, not in a hospital
- The risk of death increases 8% every hour that sepsis goes untreated
- 1 person - every 2 minutes - dies from sepsis in the United States
- 35% of American adults have NEVER heard of sepsis

Source: Sepsis Alliance Sepsis Fact Sheet - <https://www.sepsis.org/education/resources/fact-sheets/>

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## Sepsis: The Cost Nationally

The 20 most expensive conditions, 2013:	Rank	Aggregate hospital costs, \$ millions	National costs, %	Number of hospital stays, thousands	Hospital stays, %
Treated in U.S. hospitals, all payers	1	23,663	6.2	1,297	3.6
Billed to Medicare	1	14,551	8.2	838	6.0
Billed to Medicaid (second to live births)	2	3,354	5.3	143	1.9
Billed to private insurance	4	4,028	3.7	218	2.0
For uninsured individuals	1	1,054	5.7	62	3.0

Source: H-CUP Statistical Brief #204; <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-Hospital-Conditions.jsp>

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## Data

ND Top Admission DRG Bundles by Discharge Aug 2020-Jul 2021			SD Top Admission DRG Bundles by Discharge Aug 2020-Jul 2021		
North Dakota	RESPIRATORY INFECTIONS & INFLAMMATIONS	1778	South Dakota	RESPIRATORY INFECTIONS & INFLAMMATIONS	2158
North Dakota	SEPTICEMIA OR SEVERE SEPSIS	1576	South Dakota	SEPTICEMIA OR SEVERE SEPSIS	1387
North Dakota	HEART FAILURE & SHOCK	860	South Dakota	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY	1300
North Dakota	ACUTE MYOCARDIAL INFARCTION	507	South Dakota	HEART FAILURE & SHOCK	1112
North Dakota	SIMPLE PNEUMONIA & PLEURISY	542	South Dakota	SIMPLE PNEUMONIA & PLEURISY	720

ND Top Readmission DRG Bundles by Discharge Aug 2020-Jul 2021			SD Top Readmission DRG Bundles by Discharge Aug 2020-Jul 2021		
North Dakota	RESPIRATORY INFECTIONS & INFLAMMATIONS	245	South Dakota	SEPTICEMIA OR SEVERE SEPSIS	268
North Dakota	SEPTICEMIA OR SEVERE SEPSIS	228	South Dakota	RESPIRATORY INFECTIONS & INFLAMMATIONS	264
North Dakota	HEART FAILURE & SHOCK	157	South Dakota	HEART FAILURE & SHOCK	239
North Dakota	PSYCHOSES	111	South Dakota	PSYCHOSES	174
North Dakota	ACUTE MYOCARDIAL INFARCTION	102	South Dakota	G1. HEMORRHOGE	118

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## Signs and Symptoms of Sepsis

### Signs of Infection and Sepsis at Home

**Feeling Great**  
This means normal

**Red Warning Signs**  
Call your healthcare provider

**Sepsis**

**What is Sepsis?** The body's overwhelming response to infection, which can lead to tissue damage, organ failure, infection and death.

**Who it Hurts** Sepsis is an equal opportunity killer impacting people of all ages and levels of health.

**Spot the Signs** An infection with any combination of the following symptoms could mean sepsis:

- Confusion or disorientation
- Fast heart rate
- Shortness of breath
- Fever, chills, or feeling cold
- Extreme pain or discomfort
- Clammy or mottled skin

**Act fast if you suspect sepsis. Seek medical care immediately! Call your healthcare provider. Say "I suspect sepsis!"**

**Do your part... Protect, Prevent and Preserve**

- Cover your cough
- Wash your hands
- Stay up to date with immunizations
- Stay home when sick
- Take antibiotics responsibly
- Have dependents

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## Sepsis Awareness is Critical

- Sepsis is a community problem
- Four preventative steps:
  - Prevent infections
  - Good hygiene
  - Know the symptoms
  - Act FAST if sepsis is suspected



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## Sepsis

"as the physicians say it happens in hectic fever, that in the beginning of the malady it is easy to cure, but difficult to detect, but in the course of time, not having been either detected or treated in the beginning, it becomes easy to detect, but difficult to cure"

- Niccolò Machiavelli

<https://www.cdc.gov/sepsis/what-is-sepsis.html>

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### Polling Question #3

- My organization has implemented the CDC Core Elements of Antibiotic Stewardship:
  - Yes
  - No
  - Not sure

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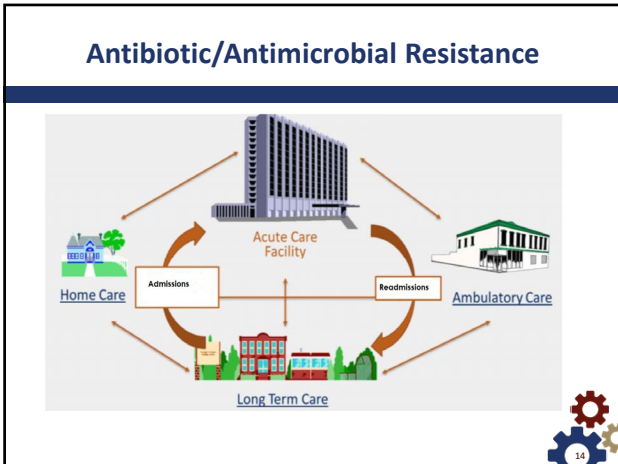
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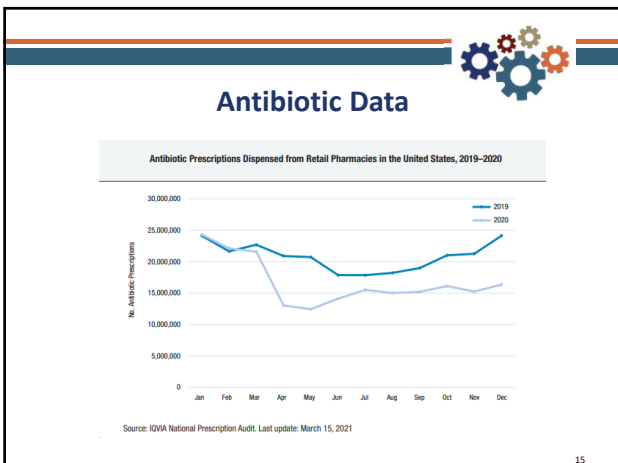
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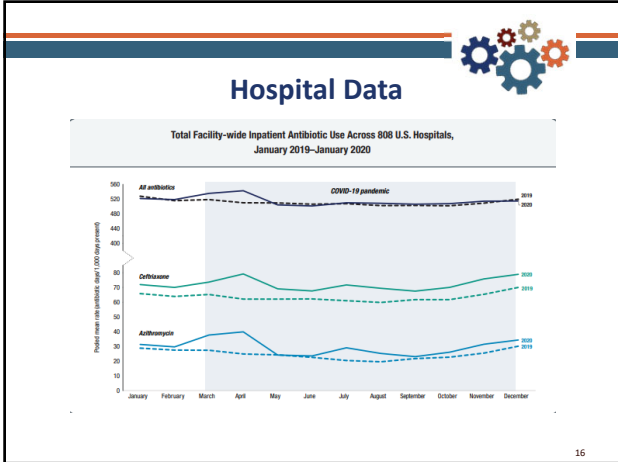
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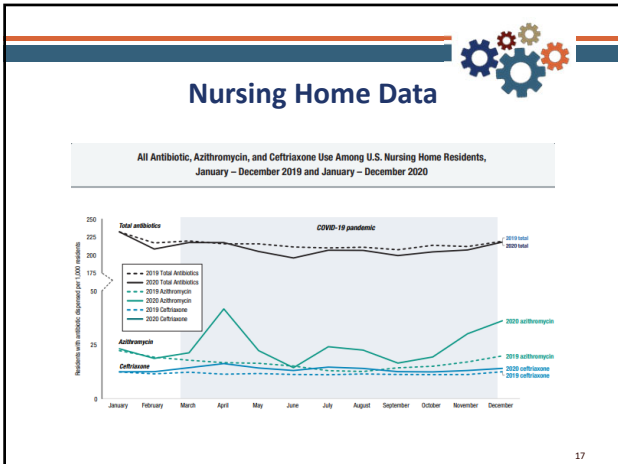
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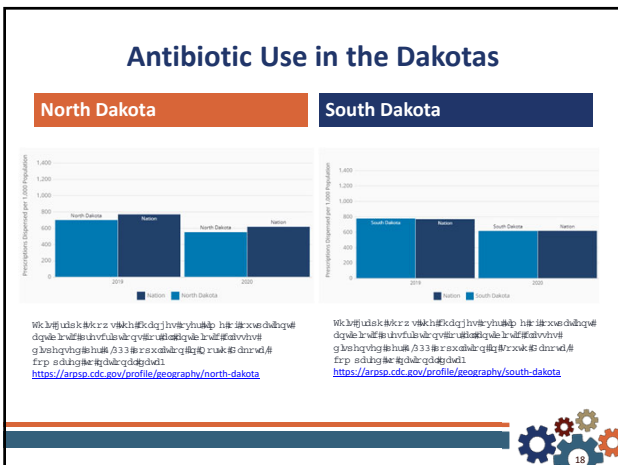
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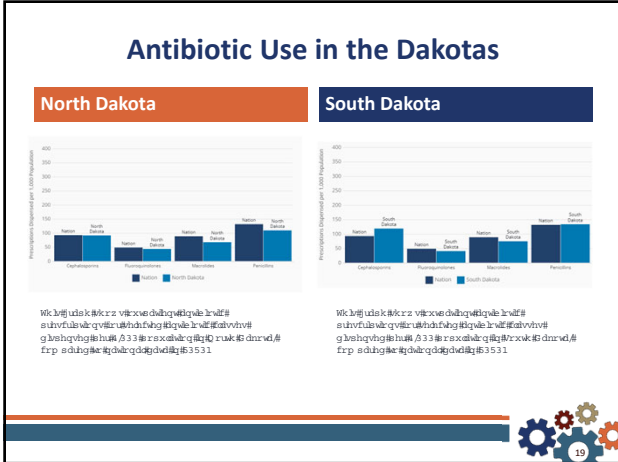
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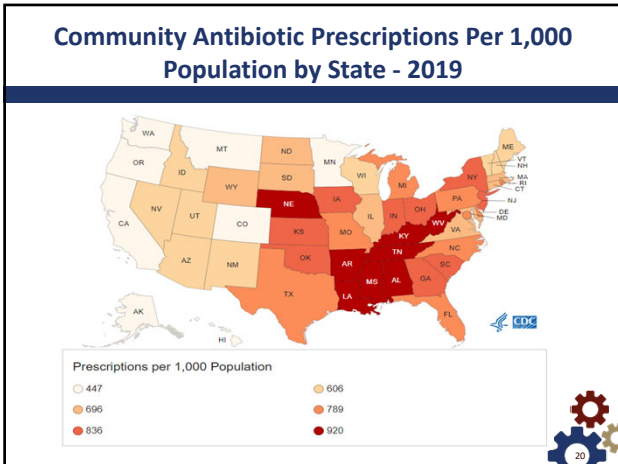
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# Antibiotic Prescribing



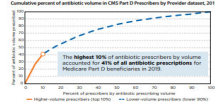
## Guide to Using Outpatient Antibiotic Prescription Data for Peer Comparison Audit & Feedback

### DATA FOR ACTION

Audit and feedback for clinicians on individual antibiotic prescribing practices, especially when including comparison with peers, has been shown to be effective at improving antibiotic prescribing.<sup>12</sup>

Centers for Medicare & Medicaid Services (CMS) provides publicly available Part D prescription data files with counts of drug claims aggregated at different levels. The Prescribers by Provider data file can be used by public health organizations and health systems to assess antibiotic prescribing among adults ≥65 years of age and identify prescribers for peer comparison (audit/audit feedback) interventions.<sup>13,14</sup>

CMS PART D PRESCRIBER FILES <sup>1</sup>	DATA ELEMENTS
NATIONAL BY GEOGRAPHY AND DRUG	antibiotic class and agent, and geographic region
STATE BY GEOGRAPHY AND DRUG	antibiotic class and agent, state, and geographic region
BY PROVIDER	antibiotic total count, prescriber characteristics (national, Provider Identifier, specialty, DR code)
BY PROVIDER AND DRUG	antibiotic class and agent, prescriber characteristics



<sup>1</sup>Location: Counts of drug claims ≥18 are submitted to the CMS Part D Prescriber Public Use File, which has a larger impact at the prescriber level compared to the national level. Information on available therapies, appropriateness cannot be assessed.

1. <https://www.cdc.gov/antibiotic-use/pdfs/outpatient-rx-analytic-guide-508.pdf>



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## Antibiotic Stewardship Resources NEW and UPDATED



- CDC has many resources available on antibiotic use and stewardship that can be used by healthcare professionals, facilities, partners and patients

Core Elements of Antibiotic Stewardship:  
[cdc.gov/antibiotic-use/core-elements/index.html](https://www.cdc.gov/antibiotic-use/core-elements/index.html)

Print Materials:  
[cdc.gov/antibiotic-use/print-materials.html](https://www.cdc.gov/antibiotic-use/print-materials.html)

Educational Resources for Healthcare Professionals:  
[cdc.gov/antibiotic-use/training/materials.html](https://www.cdc.gov/antibiotic-use/training/materials.html)

Be Antibiotics Aware Toolkit:  
[cdc.gov/antibiotic-use/week/toolkit.html](https://www.cdc.gov/antibiotic-use/week/toolkit.html)

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## New Resources



- Nursing Home Viruses/Bacteria Chart  
[cdc.gov/antibiotic-use/pdfs/VirusOrBacteria-NH-P.pdf](https://www.cdc.gov/antibiotic-use/pdfs/VirusOrBacteria-NH-P.pdf)
- Long-Term Care Pharmacy Posters  
[cdc.gov/antibiotic-use/training/materials.html#anchor\\_1626372074279](https://www.cdc.gov/antibiotic-use/training/materials.html#anchor_1626372074279)
- Hospital Discharge Poster  
[cdc.gov/antibiotic-use/pdfs/BAA-Hospital-Discharge-Flowchart-P.pdf](https://www.cdc.gov/antibiotic-use/pdfs/BAA-Hospital-Discharge-Flowchart-P.pdf)
- Watchful Waiting for Ear Infections Prescription Pad  
[cdc.gov/antibiotic-use/pdfs/WatchfulWaitingEar-P.pdf](https://www.cdc.gov/antibiotic-use/pdfs/WatchfulWaitingEar-P.pdf)

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## Health Equity and Antibiotic Use






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## Antibiotic Stewardship

**Antibiotic Stewardship**

**What is antibiotic stewardship?** It is the coordinated effort to protect antibiotics and prevent antibiotic resistance.

**What is antibiotic resistance?** It is when germs, like bacteria and fungi, develop the ability to resist the drugs designed to kill them, they continue to grow.

**How Antibiotic Resistance Spreads**

- Bacteria that are resistant to antibiotics can spread to other bacteria.
- Antibiotic-resistant genes can be passed to other germs.
- Antibiotic-resistant genes can be passed to other germs.

**When are antibiotics needed?**

Antibiotics only work on bacterial infections. Antibiotics do not work on viruses!

**Make sure you are taking antibiotics for the right reasons; ask these five questions:**

1. Do I really need antibiotics?
2. What are the risks?
3. Are there simpler, safer options?
4. How much do they cost?
5. How do I safely use antibiotics?

**Bacteria vs. Virus**

BACTERIA	BOTH	VIRUS
• Strep throat	• Strep throat	• Common cold
• Whooping cough	• Strep throat	• Strep throat
• Tuberculosis	• Strep throat	• Flu
• Urinary tract infection	• Strep throat	
• Gonorrhea	• Strep throat	
• Chlamydia	• Strep throat	
• Syphilis	• Strep throat	
• HIV/AIDS	• Strep throat	
• Lyme disease	• Strep throat	
• Tetanus	• Strep throat	
• Botulism	• Strep throat	
• E. coli	• Strep throat	
• Salmonella	• Strep throat	
• Shigella	• Strep throat	
• Clostridium	• Strep throat	
• Listeria	• Strep throat	
• Bacillus	• Strep throat	
• Staphylococcus	• Strep throat	
• Streptococcus	• Strep throat	
• Mycobacterium	• Strep throat	
• Neisseria	• Strep throat	
• Haemophilus	• Strep throat	
• Moraxella	• Strep throat	
• Legionella	• Strep throat	
• Chlamydia	• Strep throat	
• Mycoplasma	• Strep throat	
• Rickettsia	• Strep throat	
• Coxiella	• Strep throat	
• Anaplasma	• Strep throat	
• Ehrlichia	• Strep throat	
• Babesia	• Strep throat	
• Toxoplasma	• Strep throat	
• Cryptosporidium	• Strep throat	
• Cyclospora	• Strep throat	
• Isospora	• Strep throat	
• Sarcocystis	• Strep throat	
• Microsporidium	• Strep throat	
• Pneumocystis	• Strep throat	
• Toxoplasma	• Strep throat	
• Cryptosporidium	• Strep throat	
• Cyclospora	• Strep throat	
• Isospora	• Strep throat	
• Sarcocystis	• Strep throat	
• Microsporidium	• Strep throat	

**Do your part... Protect, Prevent and Preserve**

• Take your antibiotics as directed. • Don't stop taking your antibiotics early. • Don't share your antibiotics. • Don't use antibiotics for viral infections. • Don't use antibiotics for prevention unless directed by your healthcare provider. • Don't use antibiotics for cosmetic purposes. • Don't use antibiotics for chronic conditions unless directed by your healthcare provider. • Don't use antibiotics for pain relief. • Don't use antibiotics for fever reduction. • Don't use antibiotics for allergies. • Don't use antibiotics for asthma. • Don't use antibiotics for diabetes. • Don't use antibiotics for high blood pressure. • Don't use antibiotics for cholesterol. • Don't use antibiotics for thyroid disease. • Don't use antibiotics for Parkinson's disease. • Don't use antibiotics for Alzheimer's disease. • Don't use antibiotics for dementia. • Don't use antibiotics for depression. • Don't use antibiotics for anxiety. • Don't use antibiotics for bipolar disorder. • Don't use antibiotics for schizophrenia. • Don't use antibiotics for psychosis. • Don't use antibiotics for bipolar disorder. • Don't use antibiotics for schizophrenia. • Don't use antibiotics for psychosis.

**Quality Improvement Organizations** **Get it Right**

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## Defense Strategies

- Follow infection prevention and control guidelines, including screening at-risk populations
- Ask if recently received care in another facility or traveled to another country
- Alert receiving facility when transferring a person who is colonized or infected with an antibiotic-resistant germ
- Educate on ways to prevent spread of germs and infection
- Stay informed of current outbreaks
- Improve antibiotic prescribing
- Ensure receive recommended vaccines, talk to families about:
  - Preventing infections
  - Keeping wounds clean
  - Managing chronic conditions
  - Seeking medical care when an infection is not getting better
  - Understanding when antibiotics are needed

Source: [cdc.gov/drugresistance/healthcare-providers.html](https://www.cdc.gov/drugresistance/healthcare-providers.html)

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### Improve Antibiotic Prescribing

- Follow [clinical and treatment guidelines](#)
- Implement CDC's [Core Elements of Antibiotic Stewardship](#) to ensure appropriate antibiotic use
- Consider fungal infections for patients with respiratory infections that do not respond to antibiotics, for example Valley fever (coccidioidomycosis), histoplasmosis, or blastomycosis
- Watch for signs and symptoms of sepsis: [Clinical Resources and Guidelines](#)
- Perform appropriate diagnostic tests to guide antibiotic therapy, including correct drug, dose (amount), and duration (period of time)

[cdc.gov/drugresistance/healthcare-providers.html](https://cdc.gov/drugresistance/healthcare-providers.html)



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### Polling Question #4

▪ Improving immunizations has been a priority in my organization.

- Yes
- No
- Not sure



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### Immunization Data

North Dakota	South Dakota
<b>INFLUENZA</b>	<b>INFLUENZA</b>
Nursing Home 97.9%	Nursing Home 96.8%
Community 66.8%	Community 64.0%
<b>PNEUMOCOCCAL</b>	<b>PNEUMOCOCCAL</b>
Nursing Home 98.5%	Nursing Home 94.1%
Community 74.1%	Community 73.1%

Community Influenza & Pneumococcal data – Senior Data by State 2020, ages 65+ : [americashealthrankings.org/explore/senior](https://americashealthrankings.org/explore/senior)  
 Nursing Home Influenza & Pneumococcal data – CMS Data Sets MDS Quality Measures: [data.cms.gov/provider-data/dataset/dien-971u](https://data.cms.gov/provider-data/dataset/dien-971u)



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Vaccines in the Adult Immunization Schedule*		
Vaccine	Abbreviation(s)	Trade name(s)
Tetanus/pertussis influenza type B vaccine	Trip	Aceltrine <sup>®</sup> Hiberts <sup>®</sup> Flodiss <sup>®</sup>
Hepatitis A vaccine	HepA	Havrix <sup>®</sup> Vaqta <sup>®</sup>
Hepatitis A and Hepatitis B vaccine	HepA/HepB	Twineo <sup>®</sup>
Hepatitis B vaccine	HepB	Engerix-B <sup>®</sup> Recombivax HB <sup>®</sup> Hepdazir <sup>®</sup>
Human papillomavirus vaccine	HPV	Gardasil 9 <sup>®</sup>
Influenza vaccine (inactivated)	IV4	Many brands
Influenza vaccine (live, attenuated)	LAIV4	FluMist <sup>®</sup> Quadrivalent
Influenza vaccine (recombinant)	IV4	FluSole <sup>®</sup> Quadrivalent
Meadles, mumps, and rubella vaccine	MMR	M-M-R II <sup>®</sup>
Meningococcal serogroup A, C, W, Y vaccine	MenACWY-D MenACWY-CRM MenACWY-1T	Menactra <sup>®</sup> Menveo <sup>®</sup> MenQuadri <sup>®</sup>
Meningococcal serogroup B vaccine	MenB-4C MenB-FHsp	Bexsero <sup>®</sup> Tumbarba <sup>®</sup>
Pneumococcal 15-valent conjugate vaccine	PCV15	Vaxneuvance <sup>™</sup>
Pneumococcal 20-valent conjugate vaccine	PCV20	Prenmar 20 <sup>™</sup>
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax 23 <sup>®</sup>
Tetanus and diphtheria toxoids	Td	Tenivac <sup>®</sup> Tdxax <sup>™</sup>
Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel <sup>®</sup> Boostrix <sup>®</sup>
Varicella vaccine	VAR	Varivax <sup>®</sup>
Zoster vaccine, recombinant	RZV	Shingrix

\*Administer recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series if there are extended intervals between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACP or CDC.

[cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf](https://cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf) 31

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## CDC Vaccine Schedules App



**CDC Vaccine Schedules** 12+

Centers For Disease Control and Prevention

Designed for iPad

★★★★★ 3.5 + 65 Ratings

Free



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## COVID-19 Vaccines/Boosters and Motivational Interviewing (MI)

- COVID-19 vaccines are safe, effective and free. Get answers to frequently asked questions and bust myths about vaccines
- Why use MI for vaccine support?
- “MI is a collaborative, goal-oriented style of communication with attention to language of change. Designed to strengthen personal motivation for and commitment to a goal by eliciting and exploring a person’s own reasons for change with acceptance and compassion” (Miller & Rollnick)
- View GPQIN Motivational Interviewing to Build Trust in Vaccinations webinar recording



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## Immunizations

**Immunizations**

Who needs a flu shot? Everyone 6 months of age and older.

**Get your flu shot!**

**Vaccines recommended for those 65 years or older:**

- Influenza (flu)**  
You need a shot every year for better protection for the flu season or other at-risk ages.
- Pneumococcal**  
You should get a pneumococcal conjugate vaccine either once or twice. You should be followed by a shot of PPSV23.
- Tetanus, Diphtheria, Pertussis (Tdap)**  
You should get one shot of Tdap. Then, you should get a booster shot every 10 years. You should also get a booster shot if you have a wound that needs a tetanus shot.
- Shingles**  
You should get one shot of Shingles. It's a one-time shot. You should get a booster shot 5 years later.
- COVID-19**  
Visit the Centers for Disease Control and Prevention (CDC) web site for recommendations and guidelines: [www.cdc.gov](https://www.cdc.gov)

**Do your part... Protect, Prevent and Preserve**

Cover your cough  
 Wash your hands  
 Stay up to date with immunizations  
 Stay home when sick  
 Take antibiotics responsibly  
 Stay up to date with COVID-19

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## Great Plains QIN Resources

**Antibiotic Stewardship**

**Immunizations**

**Sepsis**

**Do Your Part...**

✓ For your community  
✓ For your loved ones  
✓ For yourself!

Be an active member of your healthcare team. Connect the dots between:

**Immunizations** | **Sepsis** | **Antibiotic Stewardship**

**Protect** | **Preserve** | **Prevent**

**Connecting the Dots**

Poster – Download 8.5 x 11  
Poster – Download 11 x 17

Immunization Poster – Download 8.5 x 11  
Sepsis Poster – Download 8.5 x 11  
Antibiotic Stewardship – Download 8.5 x 11

**Do Your Part...**

✓ For your community  
✓ For your loved ones  
✓ For yourself!

**Protect**  
Protect your health

**Preserve**  
Take antibiotics responsibly

**Prevent**  
Avoid infections that can lead to sepsis and the need for antibiotics

**Great Plains**

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● Collecting the Dots. Then Connecting Them. ●  
And then sharing the connections with those around you. This is how a creating human works. Collecting. Connecting. Sharing...

**Protect**  
**Preserve**  
**Prevent**

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Quality Improvement Organizations  
Sharing Knowledge. Improving Health Care.  
CENTERS FOR MEDICARE & MEDICAID SERVICES



**Great Plains**  
Quality Innovation Network



Better Together

**Great Plains QIN aspires to make health  
in our region the best in the nation**

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[greatplainsqin.org](http://greatplainsqin.org)  
1-800-458-4262

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